[Bangor Cathedral.]

BANGOR CATHEDRAL.

"On the first establishment of Christianity in Britain," says the Rev. J. Evans ('Beauties of England and Wales'), "the particular assemblies of people for the purpose of divine worship were designated by the appellation *côr*, a circle, society, or class. These côr-an afterwards received the name of their respective evangelical instructors, as côr-Bybi, côr-Illtud, côr-Deiniol, &c. When any one of these was invested with paramount authority over certain others, it assumed the distinctive name of Ban-côr, or the supreme society." Hence the present Bangor. The cathedral stands in a narrow fertile vale, at the base of a steep rock; the city, founded by Maelgyn Gwynedd, a sovereign of North Wales, as early as the sixth century, forms but one narrow crooked street, of a mile in length, with openings to the water-side. This Maelgyn had rendered himself notorious by his guilty life, and, anxious to make his peace with God and his offended people, he left his throne and government, and became a penitent recluse in the monastery that had a few years before (in 525) been founded by Deiniol or Daniel, son of the Abbot of Bangor Iscoed, as a cell to his father's house; but which afterwards became so much more famous than its parent, as to be distinguished from it by the appellation *vawr*, or great. But the first novelty of this change over, Maelgyn soon grew disgusted with a life so opposed to all his previous habits, and once more went back to his old excesses, and persevered in them to the last. To appease, probably, his own conscience, silence his murmuring subjects, and at the same time soothe Deiniol, he caused him, as the founder of the monastery, to be made a bishop; the convent church, then a Cathedral, to be flatteringly dedicated to him; and bequeathed some few lands with certain franchises to the chapter. Such was the origin of the diocese of Bangor, its constitution, and revenues (never very great). In 1118 Archbishop Baldwin and Giraldus de Barri, the preachers of the Crusades, came to Bangor, through a serpentine ravine that fatigued them excessively; the archbishop sat down on an oak torn up by the violence of the winds, and began to be very amiable and pleasant with the Crusaders who accompanied him, when the sweet notes of a bird in a wood adjoining led to a discussion as to what bird it was. "The nightingale was never heard in this country," it was observed; the archbishop significantly smiling, replied, "The nightingale followed wise counsel, and never came into Wales; but we, *unwise* counsel, who have penetrated and gone through it." After being rested and refreshed in Bangor by Guy Ruffyus, the bishop, Archbishop Baldwin celebrated mass in the Cathedral, and, "more importunate than persuasive," compelled him to take the cross, amid the general lamentation of his people, who seemed broken-hearted at the prospect of his departure from them. (Hoare's 'Giraldus.') In the Cathedral, built in 1102 (the previous one was destroyed at the Conquest), that characteristic scene occurred, in which King John, irritated by opposition to his rapacity, displayed his violent and tyrannic disposition by seizing the Welsh bishop as he was officiating at the altar. A handsome ransom procured the bishop's release, for money was John's prime object, especially as the discovery had been forced on him, in the course of several visits to Wales, that it was far easier in his rage to vow the extermination of the whole Welsh race, than to fulfil that vow when it was made. In the revolt of Owen Glendwr, 1402, Bangor Cathedral was once more reduced to a wreck, and so remained during nearly a century. The choir was then rebuilt by Bishop Dean, and the tower and nave by his successor, Bishop Skeffington, in 1532. The next bishop, Bulkeley, alienated much of the church property, and, says Godwin, "having sacrilegiously sold away five bells out of the steeple of his Cathedral, and going to see them shipped off, he was on his return homewards struck with blindness, insomuch that he never saw afterwards." This can hardly be true, or the bishop must have possessed extraordinary faculties, for there are many writings of his in existence dated during the years of his supposed deprivation of sight. The present condition of the Cathedral is attributable to *Dr.* Warren, its liberal improver at the beginning of the present century. Several ancient Welsh princes, besides many bishops and ecclesiastics, have been buried here. The most interesting sepulchral relic is a tomb of Prince Owen Gryffydd, in an arched recess.

ENGINEERING AMONG THE ALPS.

[Continued from p. 403.]

The Alpine roads which we noticed in the former article as specimens of engineering, are so far representatives of the whole class as to render much further description unnecessary: a few words may, however, be said respecting the pass of Mount Cenis, one of those which Napoleon made into a good carriage-road.

The Emperor Charlemagne crossed the Mount Cenis with an army about a thousand years ago, and established an hospice there. The pass continued to be one of the roads from France into Italy, but was of a very imperfect character until Napoleon employed the engineer Fabbroni upon it. The road now constructed is a succession of zigzags, laid out so as to render the ascent and descent as easy as possible. There are twenty-three houses of refuge established along the road, occupied by *Cantonniers*, whose duty is to take care of the road and to assist travellers. Each house is numbered. At No. 20 several sledges are kept; and in winter, when deep snow covers the inequalities on the sides of the mountains, travellers descend the slope by these sledges. The other parts of the road do not involve so many heavy engineering works as the Simplon; yet so large was the undertaking, that it occupied from 1803 to 1810 to complete it, and cost nearly three hundred thousand pounds.

Another class of engineering projects carried out in these mountainous districts relates to various hydraulic works connected with the draining of lakes or of flooded districts, and the cutting of canals for carrying off water in various ways. A remarkable example of this was noticed in a former number of the Magazine (757), in which attempts were made to remove a body of water which had been dammed up by an obstacle to its free current. Another example of a mode of draining a Swiss lake may here be described.

Near the Valley of Sarnen in Switzerland is the Lake of Lungern. This was formerly a sheet of water fringed at its margin with beautiful woods, and partly enclosed by steep banks. About fifty or sixty years ago, the inhabitants on the shores, thinking that they might acquire five hundred acres of good rich land at the expense of the lake, devised a plan for so doing. The engineer who undertook it proposed to drain off part of the water by a tunnel, so as to lower the surface of the lake many feet, and thus lay dry an available strip of land all round the shores.

In 1788 the engineer began the boring of a tunnel through the Kaiserstuhl, a ridge which divides Lake Lungern from Lake Sarnen, and which prevented the water of the former from flowing into the latter. The tunnel was commenced at the lower end, near Lake Sarnen, and was worked obliquely upwards towards the upper lake. But a difficulty then arose as to the breaking of the tunnel finally into the upper lake in such a way as to prevent the lower country being flooded by the violent and sudden outpouring of water through the tunnel. Sulzberger, the engineer, with a view of avoiding too sudden an outburst, proposed to bore a number of small holes with an auger through the wall of rock which now alone intervened between the tunnel and the water in the upper lake; and to close these perforations with cocks which might be opened and shut at pleasure. A boring-rod, twelve feet in length, driven through the rock, was followed by a discharge of mud and water, and a blow struck with a hammer by the miner from within was reverberated on the surface of the water in the lake.

The engineer, however, now discovered that the friable nature of the intervening rock, and the clay and sand above it, rendered impracticable the plan of draining the lake by a number of small perforations. He therefore determined to blow out the whole of the intervening barrier with gunpowder, since no miners could run the hazard of working in the tunnel till a large perforation was made. He enlarged the inner end of the tunnel, so as to make it a square chamber approaching to within six feet of the bed of the upper lake. Into this chamber he placed about a thousand pounds' weight of gunpowder, together with a fusee or port-fire to extend to the other end of the tunnel. The cask was rammed tightly in with sand on every side, to prevent it from exploding towards the mouth of the tunnel. These operations were exceedingly difficult on many accounts: the cask was nearly as large as the tunnel itself, and great labour was necessary in getting it up into its place; the air was so foul by the breathing of many labourers in a small space, that the lights were extinguished; while the constant influx of water, flowing through small fissures from the lake above, threw more difficulties in the way. The men could only work in this confined place a few hours at a time; and five hundred of them were required to keep the works in progress.

The length of the tunnel was about thirteen hundred feet. Strong flood-gates were erected at the lower end to stem the impetuosity of the current; and preparations were made for firing the blast on a given day. All being ready, on the morning of January 9, 1836 (for the earlier attempts had been abandoned and renewed, and abandoned again), two cannon-shots from the neighbouring hills announced to the inhabitants of the valley what was about to happen. A bold miner was despatched to fire the match, which was previously arranged to be of such a length as to allow the man who kindled it to escape before the powder became ignited. A multitude of spectators had collected on the surrounding hills to witness the result of the experiment which had cost so much time and money to perfect, and in which many were deeply interested; for it was not known how far the lower lake would remain uninjured by the afflux of water from the upper one. Ten minutes elapsed beyond the time calculated by the engineer, and yet no explosion took place; some began to fear that the attempt had failed, when at length a dull smothered sound was heard, and immediately after a black torrent of mud and water was seen to issue from the lower extremity of the tunnel. The experiment succeeded, the connexion between the tunnel and the upper lake was fully made; and the water continued to flow through the tunnel for sixteen days, by which time the level of the water in the upper lake had been reduced to the level of the mouth of the tunnel itself, so that no more could flow through.

Some inconvenience resulted to the inhabitants of the shores of the upper lakes, in a way that seems not to have been anticipated. The steep banks, deprived on a sudden of the support of the water, began to crack; large masses broke off, and a very considerable fissure appeared near Lungern, which threatened injury to it; so that the church and many of the houses were dismantled and abandoned, and the bells removed from the tower. A piece of ground several acres in extent slid into the water, but no serious inconvenience resulted. The portion of land recovered by this draining process presented for some months only a blank surface of mud and sand, to which the crows resorted in great numbers to feed on the worms and shell-fish left dry by the receding waters. By the latter end of the year a crop of potatoes was raised on part; and means were gradually adopted for bringing the whole of it ultimately into profitable cultivation.

Sometimes these hydraulic operations are intended to repair mischief occasioned by some unforeseen disaster, instead of altering an established order of things. There was formerly near the small Lake Thun a river

which ran parallel with it for a considerable distance, but did not flow into it. Owing to the quantity of mud which it brought down with its waters, and the slight inclination of its channel in this part of its course, it converted the surrounding district into an unhealthy marsh, and gave rise to a project which was executed in the early part of the last century, of directing the course of the river into the adjacent lake. This was effected by cutting a canal about two hundred and seventy feet wide from the river to the lake, a distance of rather more than half a mile. By this change of course, a considerable district of land has been drained and made profitable; while the deposit of sand and stones brought down by the river into the lake has formed a delta which is annually increasing, and which may ultimately form a patch of cultivable land.

Some of the most singular instances of Engineering in the Alps are those which relate to the conveyance of timber from the forests to market or to places where it is to be used. There were details given on this subject in Number 693, and we now present a few more, so far as they may illustrate this species of national industry.

In some of the Eastern Alps there are forests which are so far from any market as to convey an idea that it would be impossible to make them a source of profit; and yet the inhabitants of many districts live wholly by such means; necessity having roused their ingenuity to the devising of adequate plans. They have contrivances called *riesen*, *klausen*, and *rechen*, to aid in this object.

The *riesen* are the slides or troughs, such as the often described slide of Alpnach, in which the trunks of trees are made to descend with great swiftness to a river or lake. The slides are generally formed of fir-trees stripped of their branches and bark, and laid side by side so as to form a hollow channel five or six feet across and three or four in depth. These channels sometimes extend a length of many miles, arranged so as to maintain a gradual descent, sometimes curving round the shoulders of mountains, sometimes carried in tunnels through projecting rocks, and at other times conducted over ravines and depressions on the tops of tall stems, until they terminate on the borders of some stream capable of floating the wood. Many of the forests are traversed by these troughs in various directions. The woodmen fell the trees, trim off the branches, and, when the slides are slippery after rain or snow, launch them down the slides. Although the inclination is not great to the eye, perhaps not more than one in twenty, yet the trunks acquire a fearful velocity by the descent, sometimes as great as a mile a minute.

The wood-cutters set out early in spring, in gangs, and employ the summer and autumn in felling the trees, living meanwhile in temporary huts. The felled trees are sorted into stems suited for ship-building and into wood fit for fuel; the former are merely lopped; the latter are cut into logs, split and dried; and the whole are built up in vast stacks. When the weather has fairly set in and the snow has fallen deep, the wood-cutters arm their shoes with pointed spikes, and convey the logs to the margin of the trough by means of oxen. The snow is partially removed from the trough, and water is poured down, which, by its freezing, serves to diminish the friction and to increase the rapidity of the descents. Sometimes the riese or slide terminates at a precipice overhanging a lake; and the logs then precipitate themselves into the lake with irresistible force: it occasionally happens that the logs are caught and entangled before they reach the bottom of the precipice, and the woodman is lowered by a rope from the brink of the precipice to detach the logs from their entanglement.

When many logs have thus descended into a lake or river, they would be scattered about in various directions, were it not that dams and barriers of wood called *rechen* are erected at certain spots to stop their progress. They are here collected and sorted according to their quality, by the persons to whom they belong. Different proprietors distinguish the wood belonging to them by the length of the logs, each proprietor adopting a particular length of log, so that the property of each can be distinguished with great readiness.

Some of these trunks of trees are transported to the Black Sea or the Adriatic, for ship-building. The greater part of the wood, however, is consumed for fuel in the country where it grows, for supplying the mines, the salt-pans, or the melting-furnaces. Here again some curious arrangements are necessary. It frequently happens that a ridge of high mountains intervenes between the forests and the places where the fuel is to be consumed, or that the timber grows near streams flowing in a contrary direction to the point where it is wanted. Under such circumstances the transport is effected by means of a vast inclined plane, called a *Holzaufzug*, or wood-lifter, extending from the bottom of the valley to the summit of the nearest cliff. A number of waggons are constructed to run up and down it on a sort of railroad; when loaded they are attached by ropes to a species of windlass communicating with a water-wheel, which is put in motion by turning on it the stream of a mountain torrent. By this means the logs are raised to the top of a ridge many hundred feet high, and are then transported down the opposite side in the usual manner.

Goats' Milk in Spain.—We drank little wine and abundance of goats' milk—that is not only the best in the world, but superior to any other milk I ever tasted: I am not aware of the cause of its superiority, unless it be the plants on which they browse at this season. We consumed large quantities of it, generally commencing and ending the day by emptying capacious bowls, and the people were often surprised at the number of quartillos or pints that were ordered: it is sweet, and so light as to be of quite imperceptible digestion. At Pedroso, owing to the regulations above mentioned, it was obliged to be brought from some distance; the goats being driven down for the purpose of supplying our wants, but of course not allowed to quit the road or browse on the land.—*Captain Widdrington's Spain and Spaniards in* 1843.

Eating with the Fingers.—We have even gone so far as to adopt their manner of eating; and here I must digress to beg you not to say "How very disgusting!" but read *how* we do it, and then you may confess that it is not so unpleasant as you thought. The dishes are prepared in a very delicate manner; for instance, small cucumbers and other vegetables of a similar kind are scooped out and stuffed with minced meat and rice; minced meat is wrapped in vine-leaves, and so dexterously cooked, that each leaf with its contents continues compact, and is easily taken in the fingers. Fried meat in cakes, and the same in form of sausages, are equally convenient; and all I have mentioned, and a hundred others (for there is great variety in their cookery), may be taken almost as delicately as a slice of cake. For soups, rice prepared in the Eastern manner, and stews, we use spoons; and so do the Turks.—*Mrs. Poole's English-woman in Egypt.*

The Chameleon.—We have heard of the chameleon's food being the air; it lives, however, on more substantial diet; but this story may have arisen from the following circumstance:—the lungs are exceedingly voluminous, and these the creature is able to fill with air, so as to puff itself up, and in this state it often remains for hours without any movement of respiration being perceptible; on exhausting the lungs of the air, the sides of the body fall in, and the frame has a meagre appearance till the lungs are again inflated, when it becomes suddenly bloated as before. Certain continuations of these lungs penetrate the numerous cellules into which the abdominal cavity is regularly divided, while others penetrate under the skin between the muscles, to which the former adheres only by lax membranes, especially on the spine, down the centre of the under parts, and on the limbs and tail.

[Xanthian Marbles in the British Museum.]

THE XANTHIAN MARBLES.

The Xanthian Marbles, now deposited in the British Museum, have been brought from the ruins of the ancient city of Xanthus, in Lycia. Mr. Fellows discovered the ruins in 1838, when travelling in Asia Minor. He has since been three times to the country, his last expedition having been made under the auspices of the British government; and his last acquisitions have been landed, since his return, in 120 cases. Some of the sculptured marbles obtained by Mr. Fellows have been since 1842 in the Egyptian Saloon of the British Museum, and several others have been recently placed in the adjoining Phigalian Room. The rest remain in the vaults and lumber-rooms of the Museum till a large apartment, where it is intended to arrange them all together, shall be ready to receive them.

Lycia is a country peculiarly interesting, as well from the associations, poetical and historical, connected with it, as from the contrast between its former prosperous condition and its present state of desolation. In ancient times it was crowded with cities, heaps of the ruins of which have been discovered, consisting of columns, pediments, friezes, and other remains of architecture and sculpture, together with vast numbers of tombs, many of which are ornamented with beautiful sculptures. In Pliny's time there were thirty-six cities in Lycia, and there had been twice as many. The ruins of twenty-four cities have been discovered in recent times, thirteen by Mr. Fellows, and eleven previously.

The whole of Lycia, once so populous, so full of cities, and so highly cultivated, is now in the most wild and desolate state. The little port-town of Macry stands among the ruins of the ancient Telmessus, and there are a few houses on the site of Tlos; but with these and two or three other exceptions, only a few huts of peasants are scattered here and there around, but not among, the ruins of the ancient cities, and elsewhere over the country. Lions, leopards, bears, wolves, wild boars of enormous size, and large serpents are abundant in the wooded districts. In the neighbourhood of the ruins of Sidyma, for instance, where there are only three or four huts, the country is full of wild animals of the fiercest kind. In some districts, the peasant carries his gun always slung over his shoulder, even within the limits of his own cultivated fields; and the cottages throughout the whole country are protected from the wild animals by powerful and fierce dogs.

The earliest notices which we have of the Lycians are those of Homer and Herodotus. They were a warlike people, especially famed for their skill in throwing the javelin and the use of the bow. The readers of Homer are familiar with the name of Pandarus, who distinguished himself at Troy in the use of both these instruments of war, and with the exploits of Sarpedon and his friend Glaucus, who appear in the 'Iliad' as the allies of the Trojans. The poet informs us that "Sarpedon and blameless Glaucus led the Lycians, far away from Lycia and the gulfy Xanthus." Herodotus mentions that the city of Xanthus, which stood on the bank of the river, was originally peopled from Crete, and the traditional record is, that the colony was settled there under Sarpedon; that Sarpedon was joined by Lycus, an exile from Athens, who afterwards became king of the country; and that from

Lycus the country was called Lycia. Crœsus, king of Lydia, conquered the whole of Asia Minor except Lycia and Cilicia, but was himself defeated by Cyrus, king of Persia, about 550 B.C. Lycia was subdued by Harpagus, Cyrus's general, about the same time. Most of the cities of Lycia yielded to Harpagus with little opposition, but Herodotus (i. 176) gives the following account of the resistance of the Xanthians:—"When Harpagus led his army into the Xanthian plain, the Lycians, though few opposed to many, advanced to meet their enemies, and fought them with determined valour. Being overpowered, and compelled to retreat into the city, they collected together within the Acropolis their women, children, domestics, and valuable effects, and burnt the whole in the Acropolis. At the same time they bound themselves by dreadful oaths never to yield; then, sallying out, they attacked the enemy, and fought till every Xanthian was killed. The present Xanthians are all foreigners except eighty families, who happened to be absent at the time, and thus escaped." After this period Greek colonies seem to have settled all over the country, which, however, continued subject to the Persians till it was conquered by the Seleucidæ, under the government of whom it remained till the overthrow of Antiochus Asiaticus by the Romans in the year 65 B.C. The country was then transferred to the Rhodians, but their freedom was shortly afterwards granted to the Lycians, and they were allowed to preserve their own constitution and laws. Byzantine and Christian masters succeeded, till Lycia fell into the hands of the Turks, under whose despotic domination her cities have become heaps of ruins, and the fruitful land has been converted into a wilderness.

In the mythological history of Lycia are included the fables of Bellerophon and the carrying away of the daughters of Pandarus by the Harpies. Bellerophon, mounted on the winged horse Pegasus, slew the monster Chimæra, which is described by Hesiod as "breathing pernicious fire, terrible, huge, swift-footed, and strong, with three heads, one of a lion, another of a goat, and another of a serpent." In Mr. Fellows's 'Discoveries in Lycia' is represented a figure of the Chimæra from a very ancient terra-cotta: the whole body, as well as the head, is that of a lion, but the head and shoulders of a goat rise from the back of the lion, and his tail is a serpent, with a serpent's head at the end. A sculpture of Bellerophon and the Chimæra is among Mr. Fellows's last acquisitions, but it has not yet been exhibited to the public. Hesiod goes on to inform us that Chimæra brought forth the Sphinx. Bellerophon, Pegasus, and the Sphinx are frequent subjects on the Lycian sculptures and coins. The Græco-Lycian coins have the head and emblems of Apollo, whose worship in later times became general throughout the country.

The story of the daughters of Pandarus is thus told by Penelope in the 20th book of the 'Odyssey:'—

"The gods had taken away their parents, and they were left
orphans in the palace; but they were nourished by Aphrodite
with curds and sweet honey and delicious wine.
Hera bestowed on them, above all other women,
beauty and prudence; chaste Artemis perfected their stature,
and Athena taught them to execute admirable works:
but whilst Aphrodite was absent at great Olympus,
soliciting for the virgins the consummation of the marriage-chamber
from thunder-enjoying Zeus (who well knows all things,
and the good and evil destinies of mortal men),
then the Harpies seized and bore away the virgins,
and gave them to the odious Fates as a propitiation."

The Lycian language was different from the Greek, and had different alphabetic characters. Numerous inscriptions have been found; many of them have been copied, and others have been brought away. Some of the inscriptions are duplicate, in Lycian and Greek, by means of which considerable progress has already been made in the investigation of this ancient language.

The city of Xanthus was situated on the top and sides of a precipitous hill, on the east bank of the river Xanthus, about five miles from the place where it flows into the Mediterranean. The river has its source in a lofty and snow-capped range of mountains, forming a wall of partition between the north of Lycia and the elevated table-lands of Phrygia, which are not much lower than the summits of this mountain-range. The Xanthus is a wild and powerful stream, and in the lower part of its course has a volume of water greater than the Thames at Richmond, rushing forward at the rate of about five miles an hour. The colour of the water still corresponds with the name, which in Greek signifies "yellow;" and the turbulence of the river near the mouth, where the navigation is not without risk, still proves the propriety of the epithet "gulfy" applied to it by Homer.

The city of Xanthus certainly contains some of the most ancient remains of architecture and sculpture in Asia Minor. Cyclopæan walls of the finest kind, blended with later Greek work, still exist, and well-squared stones are scattered about in all directions. There are several gateways with their paved roads. The temples appear to have been very numerous, and situated as they were along the brow of the cliff, must have combined with the natural advantages of the site to form one of the most beautiful of cities. Columns, pediments, and friezes, in abundance, still remain, some standing, most of them fallen, many built into ancient walls, and heaps tumbled down the cliff, apparently overthrown by an earthquake. The Acropolis, or town on the top of the hill, evidently formed the city of the earliest inhabitants. The inscriptions and sculptures in this upper part of the city are all Lycian, and some of them perhaps as old as six or seven centuries before the Christian era. The additions made to the city by the Greeks are lower down, and in this lower part the inscriptions and sculptures are mostly Greek. The tombs extend over miles of country to the south-east and west of the city, and are numerous on the opposite side of the river.

A great number of the sculptures which have been brought to this country have been taken from the tombs, which are sometimes cut in the rock, as caves, with an ornamented door of stone,—and sometimes formed by cutting away the rock, and leaving the tomb standing as an independent structure, resembling a small Greek temple with a ridge ornamented with sculpture extending along the top of the roof. Two large tombs have been found, each of which consisted of a lofty square pillar; they had a square sarcophagus at the top, the sides of which were ornamented with sculpture, and the top covered by a square stone lid projecting far over. One of these two tombs has been called the Harpy Tomb and the other the Lion Tomb, from the sculptures on them. The square shaft or pillar of the Harpy Tomb was seventeen feet high. Two other large tombs, of a form somewhat different, have been called the Chimæra Tomb and the Winged Chariot Tomb; these two last were lofty square pedestals of three stories, with a vaulted cover, the gable-end, as it may be called, resembling a Gothic arch.

The Xanthian marbles in the Egyptian Saloon of the Museum are arranged on two temporary structures. One of these is a square erection of wood in the centre of the room, the upper part containing the sculptures of the Harpy Tomb, and the lower part portions of unconnected sculptures. The other structure is a low square enclosure of wood to the right on entering the room, on three exterior sides of which are arranged three sets of small sculptures about a foot high.

There is little doubt that the sculptures of the Harpy

Tomb are representations of the story of the daughters of Pandarus, though parts of them have not yet been explained; as for instance the two male figures between the two harpies who are flying outwards with their prey, as represented in our engraving. A warrior, standing, is receiving a helmet from an aged man with a pointed beard, who is seated on a chair, beneath which is that very undignified animal a pig. On the compartment opposite to this first one, where there are two similar harpies flying away with two females, Aphrodite (Venus), distinguished by the dove which she holds by the wings, is apparently making her solicitation to Zeus (Jove), according to the story in the 'Odyssey.' On a third compartment are two females, seated, one of whom seems to be Hera (Juno), from the peculiar form of her chair, and from the cow and calf near her, emblematic of the fable of Io; and the other has been conjectured to be Aphrodite, the three females standing before her being supposed to be her three attendants the Graces, who in early sculpture are represented as draped. The hair of Aphrodite is very elaborately dressed, as well as that of Hera, while that of the three standing figures hangs down the back in long plaits similar to the manner in which it is still frequently worn in Egypt. A fourth compartment contains an aged man, seated, and a small female figure offering a cock to him. The other figure in this compartment has been supposed to be Artemis (Diana), from what appears to be a hound near her, but which cannot be distinctly made out. Athena (Minerva) has not been recognised among the figures. The harpies are represented with the face, the carefully arranged hair, the full bosom, and the arms of a female, but with large wings, and the body terminating in the talons and tail of a bird of prey. The females with whom the harpies are flying away appear, from their comparative smallness, like children rather than the full-grown and accomplished daughters of King Pandarus; but it will be observed that their hair is too long for children. Probably the artist meant to represent the celestial beings and the harpies as much larger than mortals, and this, as we have observed in other instances, produces the effect of making the larger figures appear of the ordinary size and the smaller look like children. The sculptures of the Harpy Tomb are evidently extremely ancient. The attitudes are stiff, the drapery formal, and the work altogether indicative of a very early state of sculptural art.

Of the small sculptures in the Egyptian Saloon arranged on three sides of the square wooden enclosure, the one which faces the sculptures of the Harpy Tomb represents a bear-hunt and a boar-hunt. Most of the figures are on horseback, galloping, with their mantles flying in the wind. This small work is full of animation; the attitudes and action of the horses are varied and spirited, the positions of the riders natural, and the whole of the figures are well-formed and finished. It is much worn, but still very beautiful. The sculptures on the two other sides of this enclosure are apparently of earlier and inferior work. One represents a peaceful scene, which is in some respects very rudely designed and executed; the other, a battle, very spirited, and of better work than the last.

The Xanthian sculptures which have been recently placed in the Phigalian Room are of various sizes. One set of slabs, about three feet high, represents a battle, in which some of the combatants are on horseback and some on foot, some in Persian costume and some in Grecian. Another frieze, about two feet high, represents the siege of a walled town. In one part, the inhabitants, chiefly within the walls, but some making a sortie, are repelling the invaders with stones. In another part, soldiers are mounting the walls by a ladder, under cover of their shields. The story is told with dramatic distinctness, and the combatants are represented with great force and animation. Both these friezes are defective in the details and execution, but admirable in invention and expression. In this room there are also some smaller sculptures about a foot high; one series, of excellent workmanship, exhibits a sacrifice: there are the altar, the priest, the sacrificer, the oxen to be sacrificed, and a variety of persons bringing lambs, kids, and other animals, in their hands, slung to a stick over the shoulder, and in other ways, together with other figures bringing baskets of fruit. Another small sculpture represents a feast, with the figures recumbent in the manner customary among the Greeks and Romans.

All these sculptures are, we believe, from the ruins of the city of Xanthus, but it is stated that a few others have been brought as specimens from the ruins of some of the other cities of Lycia.

THE PREPARED PEAT-FUEL OF IRELAND.

That bog-earth, or turf, or peat (for these names are applied with very little discrimination to the same substance) is used extensively in Ireland as fuel, is pretty well known; but the mode in which the preparation of the peat for sale is carried on, and the distinct occupations which arise out of it, are not quite so well known in this country. In our No. 610 an illustrated sketch was given of a peat-gatherer, a poor woman who supplied her own hut with winter fuel from a peat-moss which happened to be near. But in a more extensive scale there is something like division of labour: and the peat-dealers estimate at money-value their relative services in bringing it to market.

The peat is furnished by those large patches of uncultivated ground called the Irish bogs; many of which have distinctive names, while others are unnamed. The Bog of Allen, one of the most considerable, extends pretty nearly all the way from Dublin to the Shannon. It is a flat district whose surface-soil is formed of that decayed vegetable matter which constitutes peat. The two principal towns of King's County, Philipstown and Tullamore, are situated on this bog; and their position is so dreary, monotonous, and uninviting, as to have given rise to the following uncomplimentary address:—

> "Great Bog of Allen, swallow down
> That odious heap called Philipstown;
> And, if thy maw can swallow more,
> Pray take—and welcome—Tullamore."

A canal runs through this bog, and on its banks may be seen stacks of peat, and the huts or hovels of the peat-gatherers. These men rent from two to five acres of peat-land each, and subsist by cutting the peat and bringing it to market. The bog of Allen once contained a million acres of peat-land; but by the cutting of two canals through it, by a process of artificial draining, and by the clearance effected by the peat-gatherers, the quantity has been reduced to less than one-third of this amount. Much good arable land has been thus obtained; and the process of reclamation is still going on.

There are thus two objects in view with respect to the cutting of peat in Ireland: the supply of fuel as a substitute for coal; and the preparation of land for agricultural purposes. The arrangements for the first object are stated by Mr. Hall to be nearly as follow:—

The turf fuel is brought to a fit state by the six distinct processes of *cutting*, *spreading*, *footing*, *rickling*, *clamping*, and *drawing home*. The first operation, or cutting, requires four men, provided with two turf-barrows. The chief or strongest man is selected to use the slane or turf-spade. This slane is narrower than a common spade, and has a ledge at right angles

to one side. The man next in strength manages the turf-barrows, of which one is being filled while the other is being wheeled away for emptying; so that as fast as the cutter slices up the turf from the surface of the ground, and fills the barrow, the second man conveys away the store. The third man goes before the turf-cutter, levelling and preparing the ground; while the fourth man lifts the pieces of turf, two at a time, as they are sliced off by the cutter, and places them in the barrow. The men thus employed are paid at the rate of about a shilling a day each, by those who make peat-gathering a regular occupation. The quantity cut and wheeled out by these four in one day is generally termed a *dark;* but it is not a definite quantity, for its amount depends a good deal on the strength and skill of the men. Still, when a cottager speaks of his turf fuel, he estimates it at so many darks; and a year's supply for a cottage with one fire varies from two to four darks. An average dark contains about sixty cubic yards of peat; being about sixty yards long, one yard in width, and in three tiers of thickness about a foot each. It is cut into small pieces, which, when wheeled away, are emptied out into the "spread-field," where it is left untouched for a few days.

A number of women and children then "spread" or scatter the turf from the small barrow-heaps, so as to cover the whole surface of the spread-field. One woman can spread about three darks in a day; and the turf is allowed to remain in this state another week. At the end of this interval the process of "footing" is commenced. This consists in collecting the turf into parcels of about six each, placing them on end in a circle, and supporting them against each other by making them meet in a point at the top. This is done by women and children, one of whom can "foot" a dark in a day. After remaining in these little heaps about ten days, the turf goes through the process of "rickling." This consists in piling the turfs one on another on their sides, into a group called a rickle; this is also the work of women and children, two of whom can rickle three darks in a day. After remaining in this state about a fortnight, the turf is exposed to the next or fifth process, that of "clamping." The clamps are small stacks about twelve feet long, six feet high, and four feet wide; and the process of clamping consists in forming these stacks from the rickles. These are placed on the most convenient spots for the carts to approach. A man can clamp a dark and a half in a day, or sometimes the turf is carted home from the rickles, without being clamped at all.

Lastly comes the "drawing home." The carts usually go to the field in fine dry weather, and bring away the turf; but sometimes, through indolence or inattention, this is deferred until the fine weather is past and the bogs have become inaccessible to carts; and the men are in such case obliged to carry the turf home in ricks on their backs through the winter, thereby enormously increasing the cost of transport.

When the turf has been "drawn home," it is usually built in a large stack exposed to the weather, either thatched over or covered with a shed, if the owner be prudent. One end of the stack is presented towards the prevailing wind at the spot; and is built up in "leets" or detached portions, in such a manner that a fortnight's or a month's supply can be obtained from the sheltered end of the stack at one time, leaving always a square face to the stack. The outside or weather turf is made slightly inclined, and the whole stack so built up as to be preserved as much as possible from the wet throughout the winter, while at the same time it is exposed to the action of the air; the winter's consumption greatly depends on the careful management of the stack.

In order to obtain a timely supply of turf, it is deemed well to commence the cutting in March, because all the processes noticed above can only be effected in the times mentioned if the weather be fine; but there is so much rain in Ireland, that the drying of the turf is in practice very much slower, and if not commenced early in the year, cannot be properly completed before winter. When conducted on this tolerably complete system, the supply of turf costs about as follows: Four men one day each, in cutting a dark of turf, 4*s.*; one woman spreading a dark, 2*d.*; one woman footing, 6*d.*; one woman rickling, 4*d.*; one man clamping 1*s.* 3*d.*: making about 6*s.* 3*d.* in the whole. The cost of bringing home depends on the distance, being as low as five shillings for half a mile, and as much as forty shillings for four miles. It will thus be seen that the turf becomes rather an expensive kind of fuel if it has to be carried to any great distance from where it is cut.

When the surface peat has been removed from a bog by these means, there is a softer and inferior kind beneath, which is afterwards brought to a fit state for fuel by other means. It is less fibrous than the surface turf, containing earth and dissolved vegetable matter, and so deficient in cohesiveness that it would crumble if worked by the spade. The mode of procuring and working it, therefore, is as follows:—After a sufficient quantity has been raised from the bog and carried to the dry margin, it is worked by the naked feet of men and women, who knead it into a kind of dough. It is then moulded into shape, like loaves for the oven, by the hands of other men and women, and spread out on the ground. When these have drained a little, several of them are placed together, and re-footed or kneaded; and by this means it is brought at length to such a state of solidity as to be formed into square pieces, "clamped" up into heaps to dry. These turfs are carried to market in a large basket of wicker-work, called a "kish:" they are black, give out much ashes, and are inferior to those procured by the shave.

Where the system of turf-cutting is thus conducted by many persons working together, the bog is not regarded as a common land in which every person may help himself; it is let out on certain terms, in small patches, to persons who get a profit for their labour beyond the rental. Every renter used to cut out where he pleased, and in consequence the surface in some parts became full of holes, which, when filled with rain-water, were sources of much inconvenience. The proprietors are, however, now acting on a better plan; they usually have a steward to mark out each person's portion or "bank;" and these stewards take care to have the peat cut continuously and uniformly.

Scotland has its peat-mosses, as well as Ireland its bogs, both being of analogous origin, and both applicable as fuel. The Scotch however have brought inventive ingenuity to bear on the subject, in a manner apparently almost unknown yet in Ireland. If the moisture could be expelled from the peat in a shorter time, it could be more promptly brought to market; and this is done in Scotland by using a compressing-machine, in lieu of the bare feet and the field-drying of the Irish system. In the Transactions of the Highland Society, some years ago, a paper was published from Mr. Slight, in which he makes the following remarks in reference to Scotland, which, with a few modifications, would be applicable to Ireland also:—"The introduction of a simple and efficient machine would appear to be of great benefit to the inhabitants of the peat districts, and should the plan be objected to as expensive beyond the means of the poorer class, it may be answered that there is no necessity for each family or householder to possess one. Let the proprietor or tacksman furnish one or more for the use of his tenants or cottars, who might again pay a small equivalent for the use of the machine. As the cottars of one farm in one

hamlet usually dig their peats in the same field, a sufficient number could join together to work it to advantage." Mr. Tod constructed a machine having this object in view. It was considered that such a machine ought to be so simple that the rudest mechanic could make it and keep it in repair, so portable as to be easily moved about from one part of a field to another, and to be cheap in construction and expeditious in action. Mr. Tod's machine consisted of a stage on which an oblong box could be placed, and a lever which pressed down on this box with great power. The box was filled with moist peat, and a solid block or cover was pressed down upon it with a force so sudden and great as to squeeze out the water, and leave the peat as an oblong solid mass. Provided with two of these boxes, the process went on with great rapidity; one man digging out the peat, another lifting it and bringing it to the machine; two were emptying, filling, and placing the boxes, and one man working the lever of the compressing-machine. The peats when taken from the machine were built up like small stacks of bricks, but so open as to admit a free circulation of air; and the stacks put up in this way became perfectly dry before being moved.

More recently Lord Willoughby has invented several peat-compressing machines, for the benefit of the poorer districts of Scotland. Many of these are very ingenious and effective; but in the primitive state of things presented in Ireland it would seem that a more simple, cheap, and rude machine would in the first instance be more immediately serviceable.

When it is stated that beds of coal exist in Ireland, it might seem strange that this less perfect kind of fuel should be so much used, while in England coal is almost everywhere the customary fuel. But it is a question mainly of comparative expense. Although there are coal-beds in Ireland, yet the coal is generally not of good quality; and even within a few miles of some of the pits English coal is said to be actually cheaper than the Irish, arising from the imperfect and unprofitable way in which the Irish pits are often managed and the great expense of land-carriage. These sources of inferiority may be surmounted; but if the coal continues to be of worse quality than that of England, it will probably be kept almost in disuse by the use of English coals in the better houses and of turf in the humbler.

With reference to the use of turf in Ireland, Mr. Hall remarks:—"Some have objected to the cutting of turf as being wasteful to the surface; others object to the cultivation of bogs as diminishing the supply of fuel. All such objections appear to be alike frivolous. The surface is unquestionably improved for cultivation by cutting away the surplus bog, as it may be wanted for fuel, provided it be not stripped quite bare, but that a sufficient quantity be left to make a good mixture with the subsoil; and, on the other hand, the supply of peat-fuel left for future generations does not receive any additional security by retaining the vast tracts, from which that fuel is hereafter to be cut, unproductive in the mean time. The peat would be as safe and much more easy of access, if it was properly drained, intersected with roads, and made to bear copious crops on its surface, than it is at present, saturated with water and covered with heather."

A Spanish Town.—Logrosan is an ill-built and dirty place: the streets are narrow and inconvenient, the masses of slate on which it stands protruding, and making the passage through narrow and ill-kept streets excessively inconmodious; and when they are flooded by the descent of the water from the higher grounds some of them are nearly impassable. The population is about 4000; and it is a perfect specimen of that class of towns called labradores, or farmers and agricultural labourers. There are a few houses with escutcheons over the doors, to which are attached small mayorazgos, or independent properties; but they are little distinguished from those of their neighbours, and there appears to be nearly the sort of equality among them so often found in such places in Spain. There are no shops, and scarcely any commerce, the whole business of the people being with the cultivation of the land. There are three large estates belonging to the town, in which every inhabitant has a share; two of which are in cultivation, and the other in monte or woodland, to supply fuel and pasture. The custom is once a year to divide or portion out the arable land, and lots are then drawn for each parcel; a single one being allotted to each man who has not a yoke of oxen, a double one to those provided with it. These lands, in fact, form the basis of their existence and afford a fair sample of one of the most curious and little noticed parts of Spanish economy. It is perfectly evident that in this system the lands must be badly cultivated: as they are of necessity changed every year, no one has a further interest than to make all he can during his occupation, and to do as little as possible in the way of improvement. I suggested whether the allowing each man to retain his portion would not be a better plan than this annual change, by which the good cultivator is made to suffer by the mismanagement or selfishness of his predecessor. This they instantly admitted would be the better system; but it cannot be adopted without some legislative enactment, and then there would be great practical difficulty in carrying it into effect. The abuses in the management of these town-lands are among the oldest, most inveterate, most extended, and most incurable in the whole economy in Spain. An immense portion of land, of the extent of which I know not that any account exists, is held by this sort of tenure. It is one cause both of the poverty and of the independence and dignity so striking in the demeanour of the Spanish peasant. By his share in the common lands he is a proprietor, and nearly above absolute want, being in the situation of a small freeholder. By being on an equality with his neighbours at the distribution and other arrangements, which are made in full assembly by the Alcaldes and other authorities of the place, and with the right of checking and controlling or opposing any plan which is a departure from ancient usage, or which does not meet with his approbation, he has many of the advantages of freedom, prescriptively and quite abstracted from any political or constitutional right. This system is drawn from the most remote antiquity, and there is little doubt chiefly from the Visigothic customs, whence many of the traditional liberties of Spain are derived.—*Captain Widdrington's Spain and Spaniards in* 1843.

Hot Winds of New South Wales.—I found the climate of Bathurst still less pleasant than that of Sydney, as in the latter place, however oppressive be the heat, the mid-day sea-breeze moderates it in some degree; but the plains of Bathurst, although considerably elevated, being shut in on all sides by lofty ranges of mountains, must endure without any relief their own oven-like atmosphere, the temperature of which is frequently increased tenfold by a "hot wind," when it seems as if a fiery blast from a huge furnace pervaded all space around, rushing into the house through every opening with the force of a hurricane. My English habit of flinging wide open all doors and windows in warm weather, I here found (as a matter of course, so near the Antipodes) a most imprudent course to pursue; as the only chance of preserving a moderately-endurable existence during the continuance of the siroceo is, immediately on its approach to shut every door and window, and with closely-drawn blinds to await, as patiently and movelessly as half-suffocated mortals may be expected to do, the abatement of the terrible visitation. With us, however, a few hours of faintness, thirst, and misery generally comprise the whole evil (though sometimes the hot winds blow almost without intermission for several days); but the luckless fields and gardens escape not so easily. Every green thing looks as if a salamander had been held over it, either drooping and dying, or dried up like half-burnt paper. I have seen large tracts of cultivated land, covered with luxuriant green crops of wheat, barley, or oats, just going into ear, scorched, shrivelled, absolutely blackened by the heat, and fit for nothing but to cut as bad litter. Less important, though extremely vexatious, is the destruction caused in gardens, where the most delicate and beautiful flowers are ever the first to wither under the burning breath of this fervid air-king.—*Mrs. Meredith's Notes and Sketches of New South Wales.*